REMR MATERIAL DATA SHEET CM-CR-1.1

EPOXY RESIN SYSTEM FOR DORMANT CRACK REPAIR AND SURFACE SEALER: SIKADUR 52

1. NAME

Sikadur 52
Injection Resin

2. MANUFACTURER

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3. DESCRIPTION

Sikadur 51, Injection Resin, is a high-solids, two-component, moisture-insensitive epoxy resin system. It is a multipurpose, high-strength adhesive formulated specifically for grouting both dry and damp cracks either by gravity or pressure injection.

4. APPLICABLE SPECIFICATION

ASTM C 881, "Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete," is a guide in specifying the material.

5. USES & LIMITATIONS

Uses: Sikadur 52 is designed for grouting by gravity or pressure injection and for sealing slabs. It will bond concrete to concrete, steel to concrete, creosoted wood to creosoted wood, wood to concrete, aluminum to aluminum, and aluminum to concrete.

Limitations: Sikadur 52, Injection Resin, should not be thinned. Solvents may prevent proper cure. Only over-dry aggregate should be used to avoid encapsulation of moisture. Substrate temperature should not be below 40° F; a lower temperature will prolong cure time. Temperatures below 35° F may cause a layer of frost that will inhibit bond. For best results, materials should be maintained between 65° and 85° F.

6. MANUFACTURER'S TECHNICAL DATA

Typical data* (Material @ 73° F (23° C) 50-percent relative humidity)

Packaging:	165-, 9-, and 3-gal units.
Shelf life:	2 years in original packaging.
Color:	Component A is straw; B is amber; mixed material is amber.
Ratio:	1 part by volume component B to 2 parts by volume A.
Viscosity:	Similar to No. 10 weight oil (175 centipoises ± 25).
Pot life:	20 to 25 min @ 73° F for Neat Sikadur 52 Injection Resin.

* All figures are from actual test results. Individual batches may vary somewhat. All values will vary with temperature and humidity.

Tack free:	(thin film) 3 to 4 hr @ 73° F
Final cure:	(75-percent ultimate strength) ASTM D 695, 2 days @ 73° F
Compressive strength: ASTM D 695 (73° F and 50-percent relative humidity)	8,800 psi
Modulus of elasticity: ASTM D 695, 28 days	2.6×10^5
Tensile strength: ASTM D 638, 14 days	5,400 psi @ 73° F
Tensile elongation: ASTM D 638, 14 days	3.8 percent @ 73° F
Shear strength: ASTM D 732, 14 days	4,400 psi @ 73° F

7. MANUFACTURER'S GUIDANCE FOR APPLICATION

Surface preparation: The surface to be repaired or sealed must be clean and sound. Concrete must be free of dust, laitance, grease, sealers, curing compound, and other bond-inhibiting contaminants. Cracks or areas to be repaired may be damp or dry.

Proportioning and mixing: The volumetric ratio of Sikadur 52 Injection Resin is 1 part B to 2 parts A. Mixing should be done in a clean pail. The epoxy should be mixed thoroughly for 3 min with a Sika (or similar) paddle attached to a low-speed (400 to 600-rpm) drill. Only the amount of Sikadur Injection that can be used in 20 min at 73° F should be prepared at a time.

Application: Neat Sikadur 52 can be used to grout cracks. It may be gravity-fed or pressure-injected into horizontal cracks and pressure-injected into vertical and overhead cracks. For pressure-injection grouting, one-way polyethylene valves or corks and grommets are inserted into clean drill holes in the face of the crack. The area around the entry port is then sealed with Sikadur Gel. Neat Injection Resin is injected with a standard caulking gun, two-component grout-injection unit, or other means. A slow, steady pressure should be maintained.

To seal slabs, Neat Sikadur 52 Injection Resin is spread over the slab with a flat-rubber squeegee or roller. After the epoxy has time to penetrate the concrete but while it is still liquid, the excess should be removed with a squeegee.

Protective clothing, goggles, gloves, or barrier cream should always be used by anyone working with epoxy resins and hardeners. Resin and curing components may be irritating to the eyes and skin on contact. Vapors from these products may cause headache, dizziness, nausea, and unconsciousness. Component A of Sikadur 52 is for industrial use only. It may cause skin sensitization or other allergic responses. Component B is dangerous. It causes severe burns as it contains alkaline amines: strong sensitizers.

If any of the material gets into the eyes, the eyes must be immediately flushed with quantities of water, and a physician should be consulted. If skin contact is made, the area must be washed with soap and water. Epoxy resins and hardeners should be used only in well-ventilated areas; vapors should not be inhaled. Anyone inhaling vapors should be moved to fresh air and given artificial respiration if he is not breathing. If any of the material is swallowed, the person should drink large amounts of water and receive medical help. Contaminated clothing must be cleaned before

8. CORPS OF ENGINEERS' EVALUATION

Technical data:

Performance Properties at 73° F	Test Method	Results
Viscosity, centipoises	ASTM D 2393	177
Gel time, min	ASTM C 881	22
Nonvolatile content, percent	ASTM D 1259	82.5
Bond to concrete, psi	ASTM C 882	2,840
Effect of moisture on bond strength, psi	ASTM C 882	1,170
Compressive strength, psi	ASTM D 695	8,160
Young's modulus of elasticity, psi	ASTM D 695	3.11×10^5
Tensile strength, psi	ASTM D 638	3,500
Tensile elongation, percent	ASTM D 638	3.3
Flexural strength, psi	ASTM D 790	1,290
Shrinkage volumetric, percent	--	5.00
Hardness	ASTM D 2240	70
Water absorption, percent	ASTM D 570	0.38

it is reused. Contaminated shoes should be discarded.

Field performance data: Sikadur 52 Injection Resin was used on the Beltzville Dam to seal cracks in a tower wall in September 1984. The performance of the material was good.

9. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of sealant activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets should be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

10. AVAILABILITY & COST

Availability: The system is marketed through a network of local distributors.

Cost: At the end of 1986, the local purchase price of material was $47.50/gal.

11. TECHNICAL SERVICE

A national network of applicators approved by the manufacturer offers field service, assistance, and related information.